

Amendments to the Drawings:

The drawing sheet attached in connection with the above-identified application containing Fig. 4 is being presented as a new formal drawing sheet to be substituted for the previously submitted drawing sheet. Fig. 4 has been amended. Appended to this amendment is an annotated copy of the previous drawing sheet which has been marked to show the changes presented in the replacement sheet.

The specific change which have been made to Fig. 4 is “DEFERENTIAL” has been changed to “DIFFERENTIAL.”

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 1-26 are now pending in this application.

Applicants wish to thank the Examiner for the careful consideration given to the claims.

Rejection of claims 1-4 and 24-25 based on Ueno

Claims 1-4 and 24 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,294,277 (“Ueno”). Claim 25 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Ueno. For at least the following reasons, these rejections are traversed.

Claim 1 (as amended) recites, among other things, a fuel cell system comprising a fuel cell stack formed by stacking a plurality of fuel cells for generating power through an electrochemical reaction utilizing reactant gas. An operation mode of the fuel cell stack is determined based on a voltage rising condition of the fuel cell stack that is detected after supply of the reactant gas is started. The voltage rising condition is determined based on a differential coefficient of a voltage value of the fuel cell stack with respect to time.

Ueno does not teach or suggest the combination of features of claim 1. For example, Ueno does not teach or suggest that a voltage rising condition is determined based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Ueno is completely silent with respect to this feature. Ueno discloses a system in which the output voltage from the stack 2 is detected by a voltmeter 76, and each output voltage from fuel cell group G1-G5 is detected by the voltmeters 761-765. (Column 6, lines 4-9 of Ueno.) At start up, the system controls the discharge valve 33 to open and close repeatedly for 60 seconds while keeping the induction valve 23 in its open state, and, during such operation, the system monitors if the detected output voltage from the stack 2 satisfies a predetermined output condition. (Column 8, lines 40-54 of Ueno.) If the predetermined output condition is not satisfied, the system stops its operation, and if the predetermined output condition is satisfied, the procedure is advanced to the normal operation (Column 8, line 55 to column 9, line 31 of

Ueno.) Although Ueno discloses a system that monitors whether or not the output voltage is greater than a predetermined value (which is referred to on page 4, lines 1-4 of the Office Action), Ueno is completely silent about determining a differential coefficient of a voltage value with respect to time. Because Ueno lacks this feature, claim 1 is allowable over Ueno.

Claim 2 (as amended) recites, among other things, a fuel cell system comprising: a fuel cell stack formed by stacking a plurality of fuel cells for generating power through an electrochemical reaction utilizing reactant gas; voltage rising detection means for detecting a voltage rising condition of the fuel cell stack after supply of the reactant gas is started, wherein the voltage rising detection means is configured to determine the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time; and control means for determining an operation mode in accordance with the voltage rising condition detected by the voltage rising detection means and operating the fuel cell stack in the determined operation mode.

Ueno does not teach or suggest the combination of features of claim 2. For example and analogous to the discussion regarding the rejection of claim 1, Ueno does not teach or suggest determining the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Because Ueno lacks this feature, Ueno necessarily does not teach or suggest the voltage rising detection means of claim 2. Thus, claim 2 is allowable over Ueno.

Claim 3 (as amended) recites, among other things, a fuel cell system comprising: a fuel cell stack formed by stacking a plurality of fuel cells configured to generate power through an electrochemical reaction utilizing reactant gas; a voltage rising detector configured to detect a voltage rising condition of the fuel cell stack after supply of the reactant gas is started, wherein the voltage rising detector is configured to determine the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time; and a control unit configured to determine an operation mode in accordance with the voltage rising condition detected by the voltage rising detector and configured to operate the fuel cell stack in the determined operation mode.

Ueno does not teach or suggest the combination of features of claim 3. For example and analogous to the discussion regarding the rejection of claim 1, Ueno does not teach or

suggest determining the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Because Ueno lacks this feature, Ueno necessarily does not teach or suggest the voltage rising detector of claim 3. Thus, claims 3 is allowable over Ueno.

Claims 4 and 24-25 depend from and contain all the features of claim 3, and are allowable for the same reasons as claim 3, without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejections is respectfully requested.

Rejection of claims 1-4, 6-7, and 24-25 based on Fuglevand

Claims 1-4, 6, and 24-25 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,387,556 (“Fuglevand”). Claims 6-7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fuglevand. For at least the following reasons, these rejections are traversed.

Claim 1 (as amended) recites, among other things, a fuel cell system comprising a fuel cell stack formed by stacking a plurality of fuel cells for generating power through an electrochemical reaction utilizing reactant gas. An operation mode of the fuel cell stack is determined based on a voltage rising condition of the fuel cell stack that is detected after supply of the reactant gas is started. The voltage rising condition is determined based on a differential coefficient of a voltage value of the fuel cell stack with respect to time.

Fuglevand does not teach or suggest the combination of features of claim 1. For example, Fuglevand does not teach or suggest that a voltage rising condition is determined based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Fuglevand is completely silent with respect to this feature. Fuglevand discloses a system in which the voltages of the individual respective fuel cells 90 are monitored by the voltage sensor 92. (Column 9, lines 27-46 of Fuglevand.) If the control system 30 observes that an electrical characteristic (e.g., voltage) of a fuel cell 90 is below a desired range, the control system 30 controls respective switching devices 96 such that the fuel cells 90 are shunted in sequential order. (Column 10, lines 11-41 of Fuglevand.) Although Fuglevand’s system

monitors whether or not the voltage is below a desired range (which is referred to on page 5, lines 8-11 of the Office Action), Fuglevand is completely silent about determining a differential coefficient of a voltage value with respect to time. Because Fuglevand lacks this feature, claim 1 is allowable over Fuglevand.

Claim 2 (as amended) recites, among other things, a fuel cell system comprising: a fuel cell stack formed by stacking a plurality of fuel cells for generating power through an electrochemical reaction utilizing reactant gas; voltage rising detection means for detecting a voltage rising condition of the fuel cell stack after supply of the reactant gas is started, wherein the voltage rising detection means is configured to determine the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time; and control means for determining an operation mode in accordance with the voltage rising condition detected by the voltage rising detection means and operating the fuel cell stack in the determined operation mode.

Fuglevand does not teach or suggest the combination of features of claim 2. For example and analogous to the discussion regarding the rejection of claim 1, Fuglevand does not teach or suggest determining the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Because Fuglevand lacks this feature, Fuglevand necessarily does not teach or suggest the voltage rising detection means of claim 2. Thus, claim 2 is allowable over Fuglevand.

Claim 3 (as amended) recites, among other things, a fuel cell system comprising: a fuel cell stack formed by stacking a plurality of fuel cells configured to generate power through an electrochemical reaction utilizing reactant gas; a voltage rising detector configured to detect a voltage rising condition of the fuel cell stack after supply of the reactant gas is started, wherein the voltage rising detector is configured to determine the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time; and a control unit configured to determine an operation mode in accordance with the voltage rising condition detected by the voltage rising detector and configured to operate the fuel cell stack in the determined operation mode.

Fuglevand does not teach or suggest the combination of features of claim 3. For example and analogous to the discussion regarding the rejection of claim 1, Fuglevand does

not teach or suggest determining the voltage rising condition based on a differential coefficient of a voltage value of the fuel cell stack with respect to time. Because Fuglevand lacks this feature, Fuglevand necessarily does not teach or suggest the voltage rising detector of claim 3. Thus, claims 3 is allowable over Fuglevand.

Claims 4, 6-7 and 24-25 depend from and contain all the features of claim 3, and are allowable for the same reasons as claim 3, without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejections is respectfully requested.

Allowability of claim 26

Claim 26 is added and either is generic to the elected species A and subspecies A of Species A. Claim 26 depends from and contains all the features of claim 3, and is allowable for the same reasons as claim 3, without regard to the further patentable features contained therein. For at least these reasons, allowance of claim 26 is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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